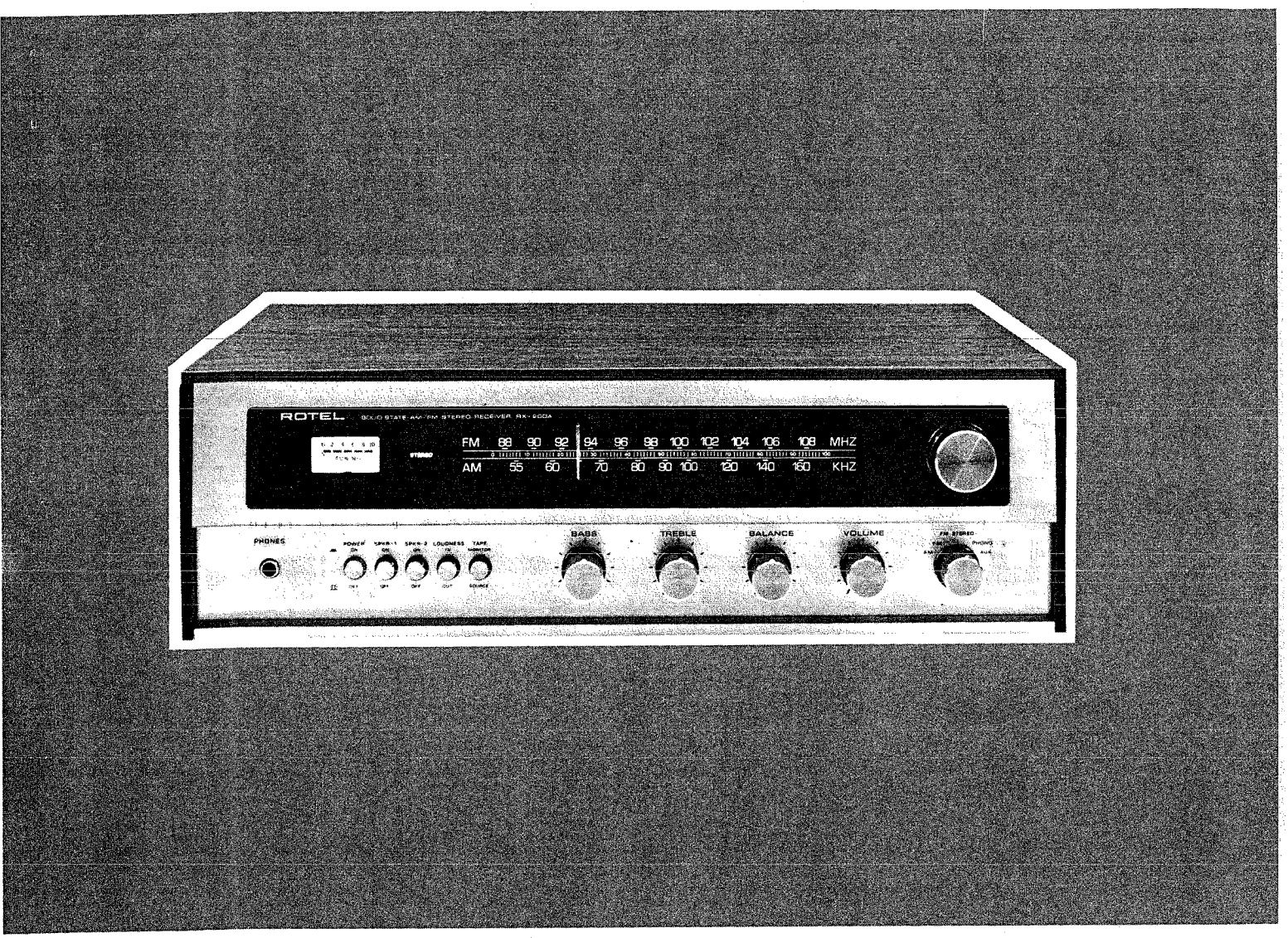
ROTEL®

RX-200A

AM/FM STEREO RECEIVER



technical manual

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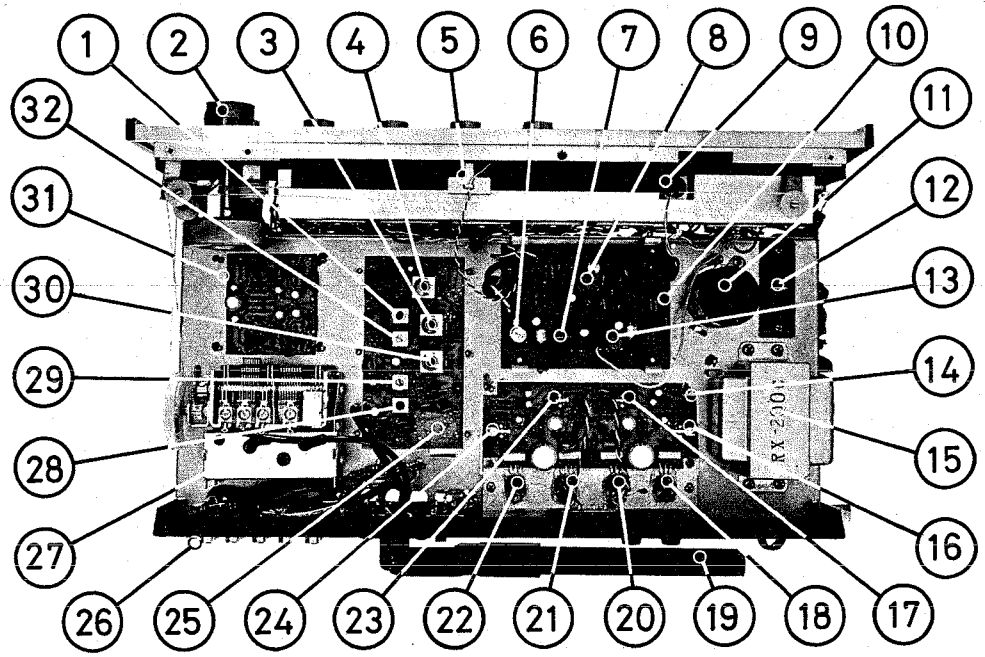
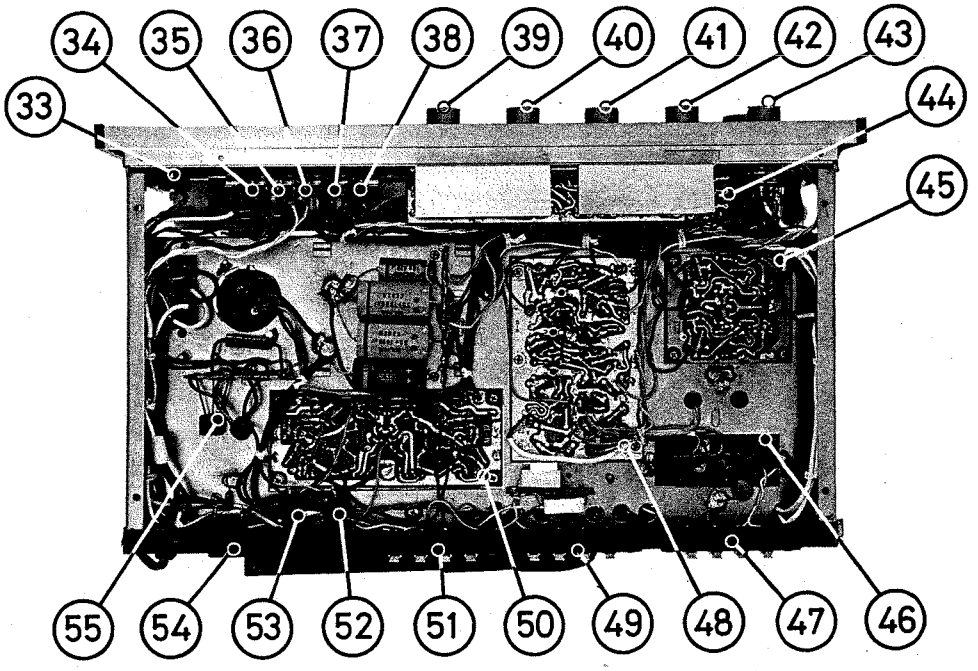
ROTEL

CHASSIS LAYOUT

1. T106, AM IFT, 3rd
2. Tuning Knob
3. T102, FM IFT, 3rd
4. T103, FM IFT, Ratio
5. Dial Pointer
6. L301, MPX 10KHz Coil
7. VR301, Separation Adj.
8. T301, MPX 19KHz Transformer
9. FM-Stereo Indicator
10. FM-Stereo Circuit Board
11. C906, Ripple Filter
12. Line Voltage Selector
13. T302, MPX 38KHz Transformer
14. Main Amp. Circuit Board
15. T901, Power Transformer
16. VR603, DC Balance Adj., R-ch.
17. VR604, Idling Current Adj., R-ch.
18. Tr614, Power Transistor, R-ch..
19. L901, AM Antenna Coil
20. Tr613, Power Transistor, R-ch.
21. Tr606, Power Transistor, L-ch.
22. Tr607, Power Transistor, L-ch.
23. VR602, Idling Current Adj., L-ch.
24. VR601, DC Balance Adj., L-ch.
25. AM/FM IF Circuit Board
26. Input Terminal Strip
27. AM/FM Front end
28. L102, AM Local Oscillator Coil
29. T104, AM IFT, 1st
30. T101, FM IFT, 2nd
31. Equalizer Amp. Circuit Board
32. T105, AM IFT, 2nd



33. J901, Headphone Receptacle
34. Power Switch
35. Speaker Switch, SPKR-1
36. Speaker Switch, SPKR-2
37. Loudness Switch
38. Tape Monitor Switch
39. VR502, Bass Control
40. VR501, Trable Control
41. VR503, Balance Control
42. VR504, Volume Control
43. Func. Selector Switch
44. Preamp. Circuit Board
45. Equalizer Amp. Circuit Board
46. AM/FM Front end
47. Antenna Terminal Strip
48. AM/FM IF Circuit Board
49. Output Terminal Strip, R-ch.
50. Main Amp. Circuit Board
51. Output Terminal Strip, L-ch.
52. F901, DC Fuse, 1.5A
53. F902, AC Fuse, 2A
54. J902, AC Outlet
55. D901, Rectifier



PRECAUTIONS

1. Always disconnect the chassis from power line when soldering. Turning the power switch OFF is not enough. Power line leakage passing through the heating element may destroy the transistors.
2. Never attempt to do any work on the transistor amplifiers without first disconnecting the AC line cord and waiting until the power supply filter capacitors have discharged.
3. Replacement for output and driver transistors, if necessary must be made from the same beta group as the original type.
4. If one output transistor burns out (open or short) always remove all output transistors in that channel and check the bias adjustment, the control and other parts in the network with an ohm-meter before inserting a new transistor. All transistors in one channel will be destroyed if the base biasing circuit is open on the emitter end.
5. When mounting a replacement power transistor, be sure the bottom of the flange, the mica insulators and the surface of the heat sink are free of foreign matter, ... for they may cause transistor failure.
6. Silicon grease must be applied between the transistor and the mica insulator, and between the mica insulator and the heat sink for better heat conduction.

PREDRIVER / DRIVER ADJUSTMENT

1. Set BALANCE, BASS and TREBLE controls to mid-position.
2. Set LOUDNESS switch to "OFF", SELECTOR switch to "AUX", speakers switch rear "OFF" and matrix to "STEREO".
3. Connect 8-ohm, 20 watts resistor across Left speaker terminals. Then in parallel with load resistor, connect the vertical input leads of an oscilloscope.
4. Connect an audio signal generator to Left channel, AUX input and apply 1,000Hz (sine wave) signals.
5. Connect AC power cord and rotate Volume Control clockwise – full volume. Increase generator output until sine wave on scope just starts clipping. Adjust DC Balance Control VR601 (on Main Amp. Circuit Board) for equal clipping on the positive and negative half cycles of the signal (see Figure 1).
6. Adjust idling current using a DC milli-volt meter across R615 resistor (on Main Amp. Circuit Board), and rotate Idling Adjust Control VR602 to obtain a 7.5 mV reading on DC milli-volt meter (no signal input). See Figure 2.
7. Repeat the steps 3 thru 6 as above for Right Channel. (Use VR603, 604 and R630).

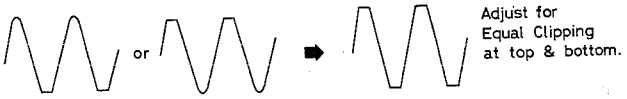


Figure 1

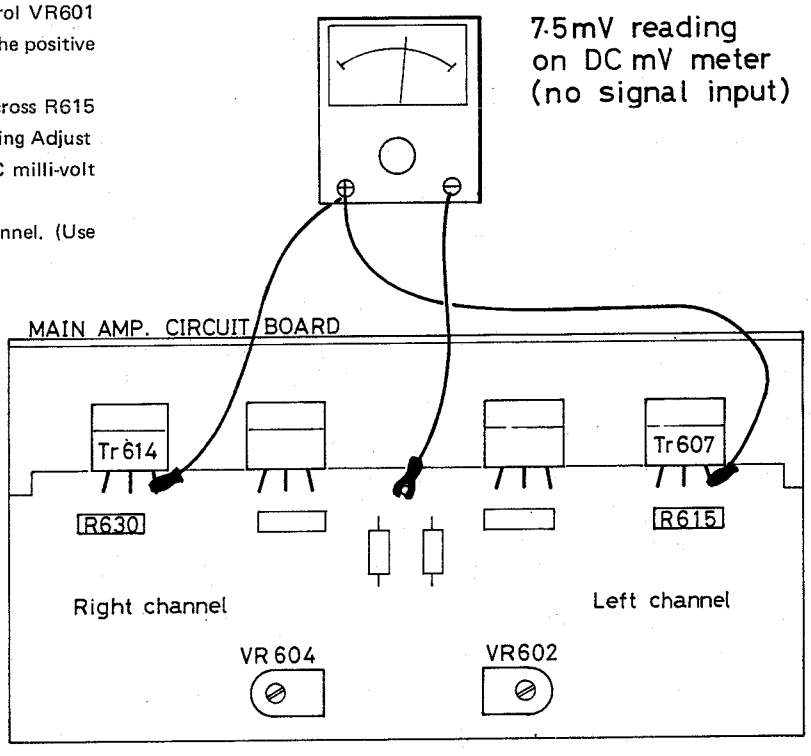


Figure 2

AM ALIGNMENT PROCEDURE

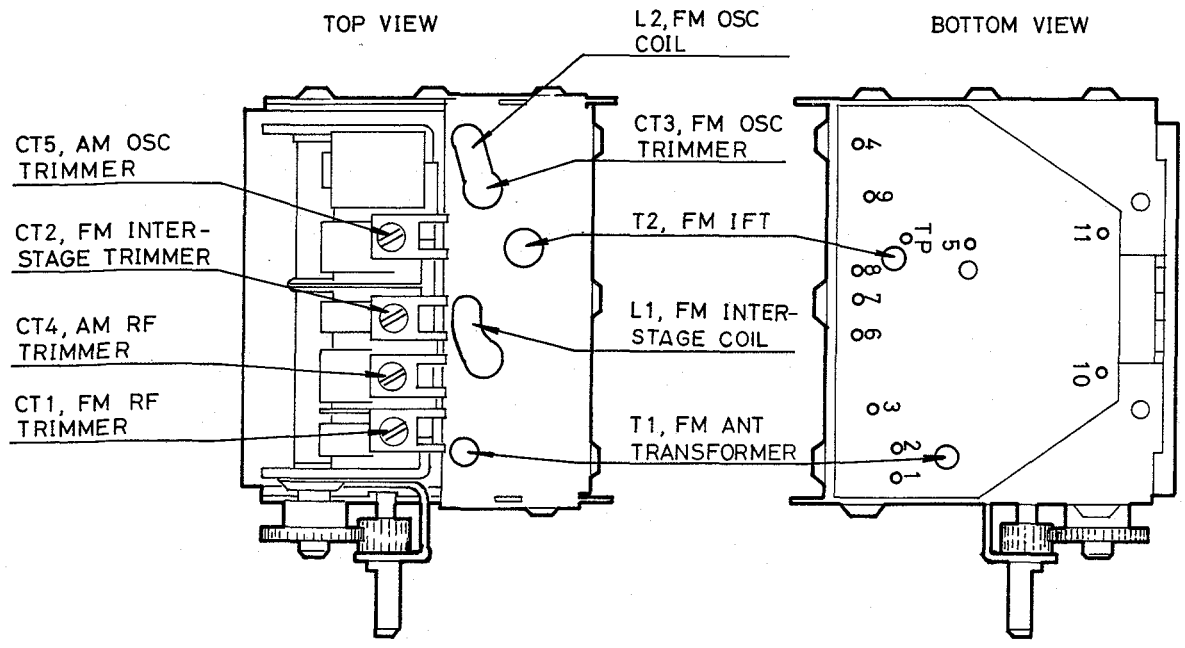
Instruments: AM Signal Generator and AC VTVM.

NOTES: Set Selector switch to AM.

Input signal must be kept as low as possible to avoid AVC action.

Step	Generator		Tuning Dial Setting	Output Indicator Connected to	Adjust	Adjust for
	Coulping	Frequency				
1	Tr104 Base (on IF board) through a 0.01 mfd capacitor.	455 KHz (400 Hz 30% mod.)	Non interfering at low end of scale.	AC VTVM to TAPE OUT jack.	T106, 105 and 104 (on IF board)	Maximum reading on VTVM.
2	Connect to short loop of wire. Radiate signal into ferrite loopstick antenna.	600 KHz (400 Hz 30% mod.)	600 KHz		L102 (OSC) (on IF board) & L901 (ANT coil).	
3		1400 KHz (400 Hz 30% mod.)	1400 KHz		CT5 (OSC trim.) & CT4 (ANT trim.) (on Front end)	
4	Repeat steps 2 and 3 until no further improvement is noticed.					

FRONT END LAYOUT



FM ALIGNMENT PROCEDURE

Instruments: FM Sweep Generator, FM Signal Generator, AC VTVM and Oscilloscope.

NOTE: Set Selector switch to FM.

Step	Generator		Tuning Dial Setting	Output Indicator Connected to	Adjust	Adjust for
	Connected to	Frequency				
1	FM Sweep Generator to Test Point (on Front end T.P. terminal)	10.7 MHz	Quiet point on band	Oscilloscope to junction of R112 and C116 (on IF board)	T103, 102, 101 (on IF board), & T2 (Front end).	Maximum and Balanced S curve on scope.
2	Disconnect FM Sweep Generator and connect FM Signal Generator to FM antenna terminals.					
3	FM Signal Generator to FM antenna terminals.	98 MHz (400 Hz 100% mod.)	Tune for maximum output point.	Oscilloscope and AC VTVM. to TAPE OUT jack.	Touch up T2, 101, 102 and 103 if necessary.	Maximum and undistorted amplitude on scope.
4	Same as in step 3. Signal strength must be kept -3db of limitter saturation.	90 MHz (400 Hz 100% mod.)	90 MHz		L2 (OSC), L1 (RF) & T1 (ANT) (on Front end).	Maximum reading on VTVM.
5		106 MHz (400 Hz 100% mod.)	106 MHz		CT3 (OSC), CT2 (RF) & CT1 (ANT) (on Front end).	
6	Repeat steps 4 and 5 until no further improvement is noticed.					

FM-STEREO (MPX) ALIGNMENT PROCEDURE

Instruments: FM Stereo Generator, AC VTVM and Oscilloscope.

NOTE: The FM IF Amplifier Alighment must be completed before attempting this MPX Alignment. Poor IF alignment will result in poor Multiplex Adjustment.

Set MPX Separation Control VR301 (on MPX board) to mid-position before starting this procedure.

Set Selector Switch to FM STEREO.

Connect Stereo Generator to FM antenna terminals.

Step	Stereo Generator		Output Indicator Connected to	Adjust	Adjust for
	Modulation	RF Deviation			
1	19 KHz Pilot signal only	1 – 2%	VTVM & Oscilloscope to Test Point TP-2 (on MPX board)	L301, T301 and 302	Maximum reading on VTVM.
2	Composite 1 KHz signal to Left channel only	Pilot 10% Signal 70%	VTVM & Oscilloscope to Left channel TAPE OUT jack.	T301	Maximum and undistorted sine wave on scope.
3	Composite 1 KHz signal to Right channel only			VR301	Minimum reading on VTVM.
4	Same as in step 2.		VTVM & Oscilloscope to Right channel TAPE OUT jack.		
5	Repeat steps 3 and 4 until no further improvement is noticed.				

TROUBLE SHOOTING

ENTIRE UNIT INOPERATIVE

I If the pilot lamp does not light,

A. Check to see if the AC Power Supply Cord is properly connected to the power source, or

B. Check to see if there is adequate voltage from the power source, or

C. If A & B are OK, check to see if the AC fuse F902 is not blown.

1. If the AC fuse is OK,
   a. AC Power Supply Cord is cut, or
   b. Primary Winding in the Power Transformer is cut, or
   c. Power switch connection is faulty.
2. If the AC fuse is blown,
   a. Primary Winding in the Power Transformer is shorted out, or
   b. Secondary Winding in the Power Transformer is shorted out, or
   c. Rectifier D901 is shorted out.

II. If the pilot lamp does light,

A. Check to see if the DC fuse F901 is not blown.

1. If the DC fuse is blown,
   a. Output circuits (including the speakers) are shorted out, or
   b. +B circuits are shorted out, due to faulty C906 or faulty Transistors Tr604, 605, 606, 607, 611, 612, 613 or 614, or
   c. Faulty C607 or 614.
2. If the DC duse is OK,
   a. And if the B voltage is not OK,
      (1). Rectifier D901 is open, or
      (2). Secondary winding in the Power Transformer (center tap, black lead) is cut, or
      (3). Faulty DC fuse connection.
   b. And if the B voltage is OK,
      (1). And if there is signal output at the TAPE OUT jacks,
      (2). (a). Tape Monitor switch connection is faulty, or
      (b). Transistors Tr601, 602, 608 or 609 is faulty, or
      (c). C601, 602, 608, or 609 is faulty.
      (3). And if there is no signal output at the TAPE OUT jacks,
      (a). Transistors Tr501, 502, 503 or 504 is shorted out or open, or
      (b). C501, 502, 509 or 510 is open, or
      (c). Wires from the Function switch are cut.

ONLY PHONO SECTION INOPERATIVE

I. If there is no fault in the wires to the Equalizer Amp Board,

A. Transistors Tr401, 402, 403 or 404 is shorted out or open, or

B. C401, 405, 408, 410, 414 or 417 is open, or

C. Function switch connection is faulty.

TONE CONTROLS INEFFECTIVE

I. C504, 505, 506, 507, 512, 513, 514 or 515 is faulty.

LOUDNESS CONTROL INEFFECTIVE

I. C508 or 516 is faulty, or

II. Loudness switch connection is faulty.

RADIO SECTION INOPERATIVE

I. If both AM and FM are inoperative,

A. Measure voltage at B5 (refer to circuit diagram),

1. If there is no voltage at B5,
   (a). Zener diode D902 is shorted out, or
   (b). C907 is faulty.

2. If there is proper voltage at B5,
   (a). Function switch connection is faulty, or
   (b). Transistors 102 or 103 is faulty, or
   (c). C125, 128, 129 or 134 is faulty.

II. If only AM is inoperative,

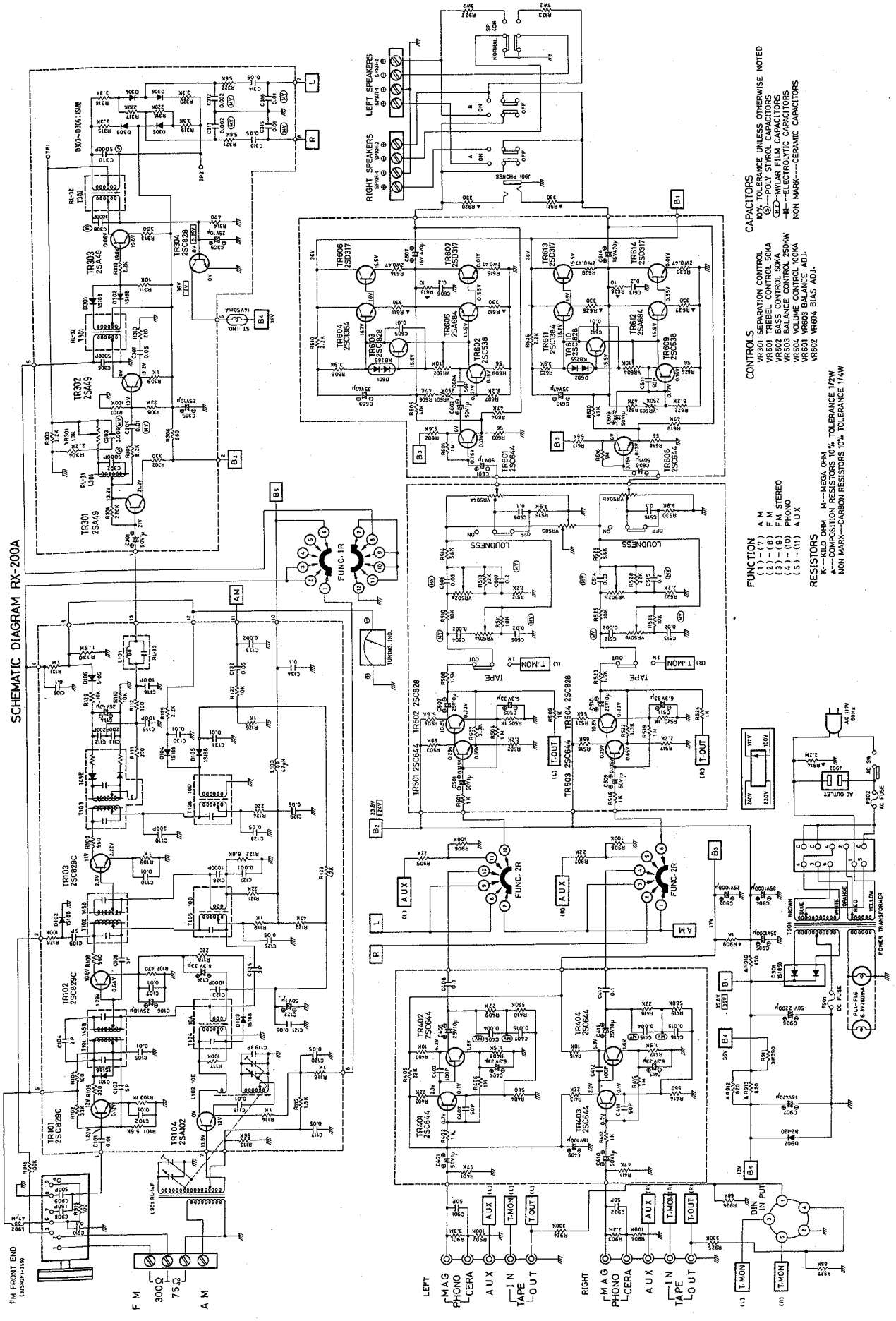
A. Measure voltage of IF PCB (8),
   1. If there is no voltage,
      (a). Function switch connection is faulty, or
      (b). Wire from Function switch is cut, or
   2. If there is proper voltage,
      (a). C117, 118, or 120 is faulty, or
      (b). Transistor Tr104 is faulty, or
      (c). Coils L102 or 901 is faulty, or
      (d). AM IFT T201, 202 or 203 is faulty.

III. If only FM is inoperative, check to see if MPX working properly,

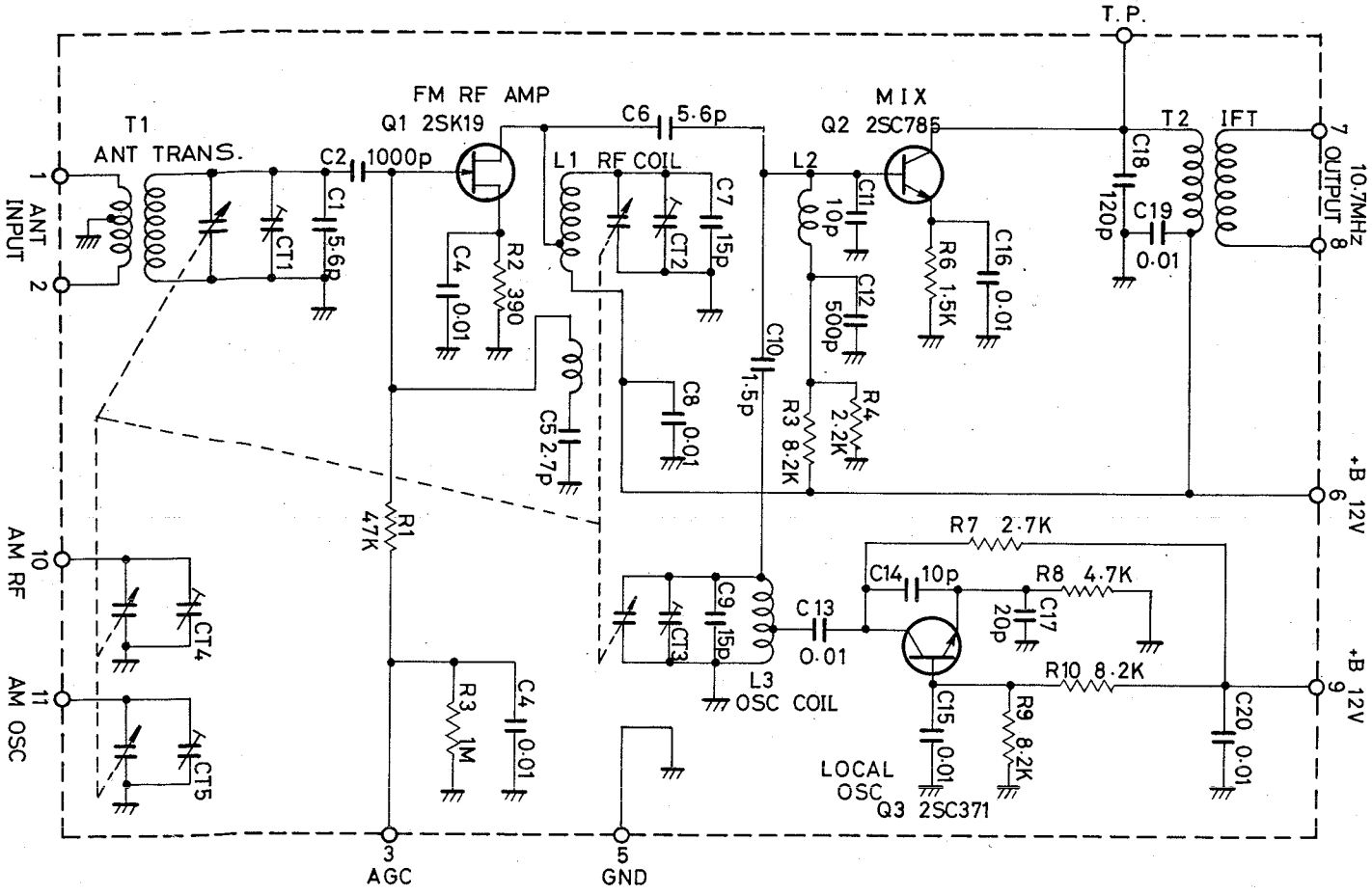
A. If MPX is faulty, measure voltage at B2.
   1. If there is no voltage at B2,
      (a). C305 is faulty.
   2. If there is proper voltage at B2,
      (a). And if there is no signal with Function switch set at FM,
         (1). C301 is faulty, or
         (2). Transistor Tr301 is faulty.
      (b). If there is no signal with Function switch set at FM STEREO,
         (1). Transistors Tr302 or 303 is faulty.
      (c). If there is proper voltage at B4 but Stereo Lamp does not light,
         (1). Check for audibility of stereo signal.
            (a). If no stereo signal is heard from speakers, then, check the above mentioned transistors.
            (b). If stereo signal is heard, then stereo lamp or transistor Tr304 is faulty.
      (d). If stereo lamp stays on when signal changes from stereo to mono,
         (1). Transistor Tr304 is faulty,

B. If MPX is OK, check FM IF circuit.
   1. If FM IF is not OK,
      (a). Measure voltage of IF PCB (6),
         (1). If there is no voltage,
            (a). Function switch connection is faulty, or
            (b). Wire from Function switch is cut, or
            (c). C105 or C910 is faulty.
         (2). If there is proper voltage,
            (a). Transistor Tr101 is faulty, or
            (b). FM IFT T101, 102 or 103 is faulty.
   2. If FM IF is OK,
      (a). And if FM Front end is faulty,
         (1). Transistors Tr1, 2 or 3 is faulty, or
         (2). C8, 19 or 20 is faulty.
      (b). If FM Front end is OK,
         (1). Input circuit is grounded, or
         (2). FM antenna improperly connected.

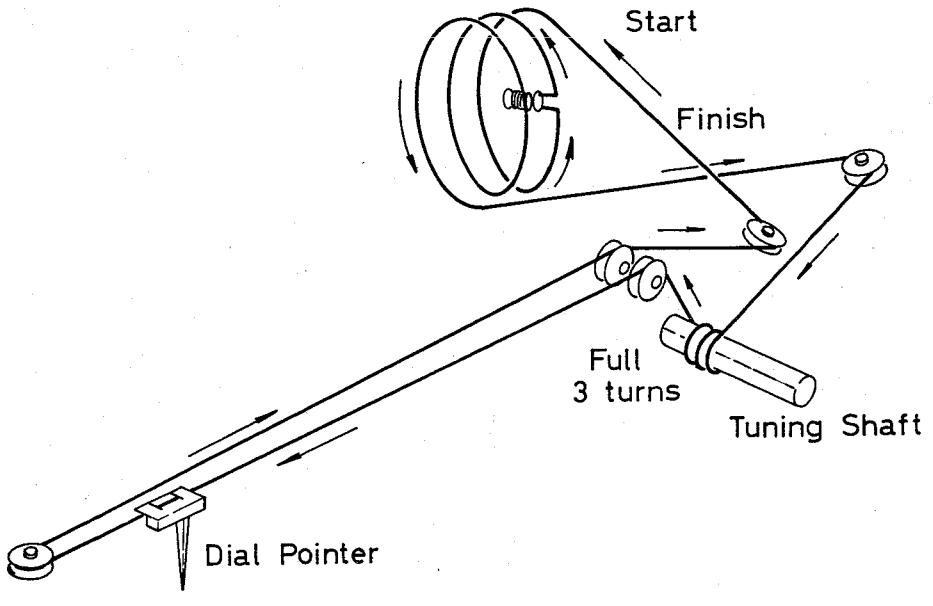
SCHEMATIC CIRCUIT DIAGRAM



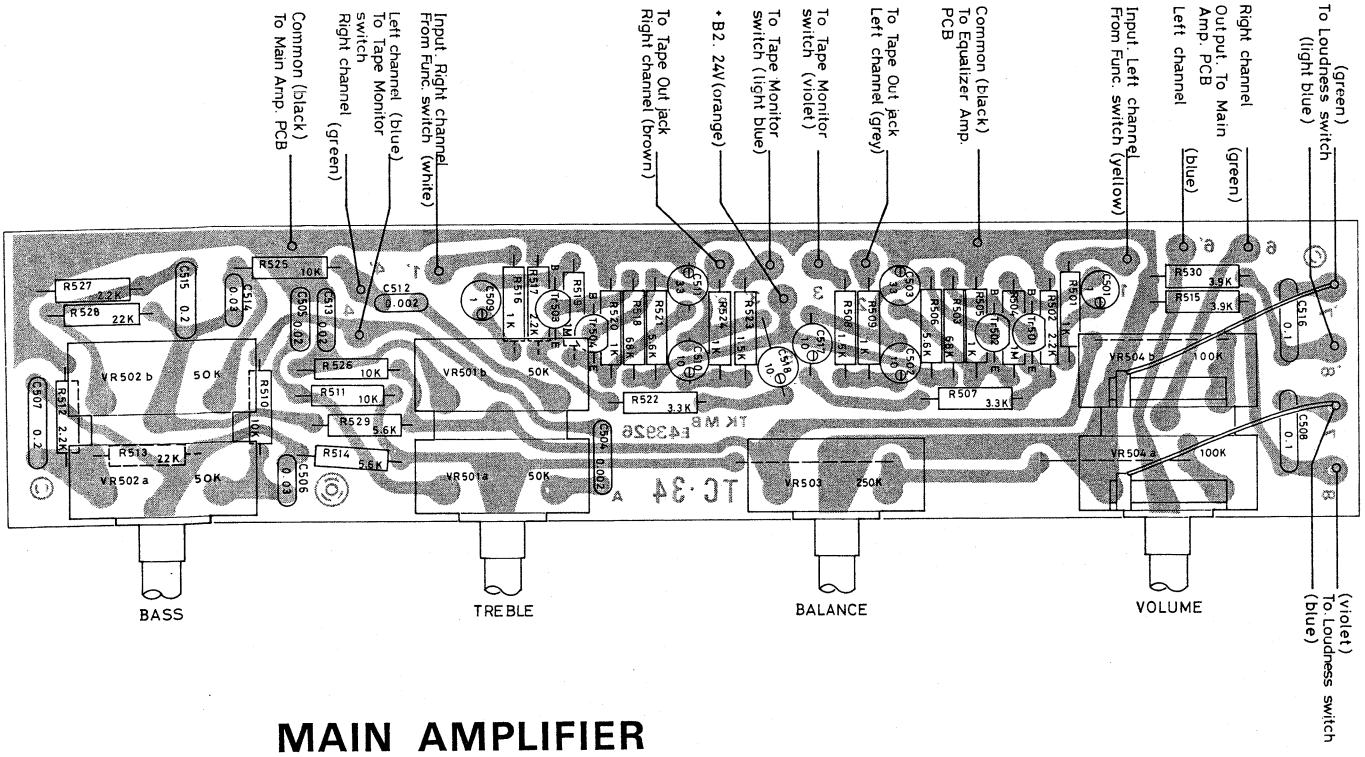
FRONT END SCHEMATIC DIAGRAM



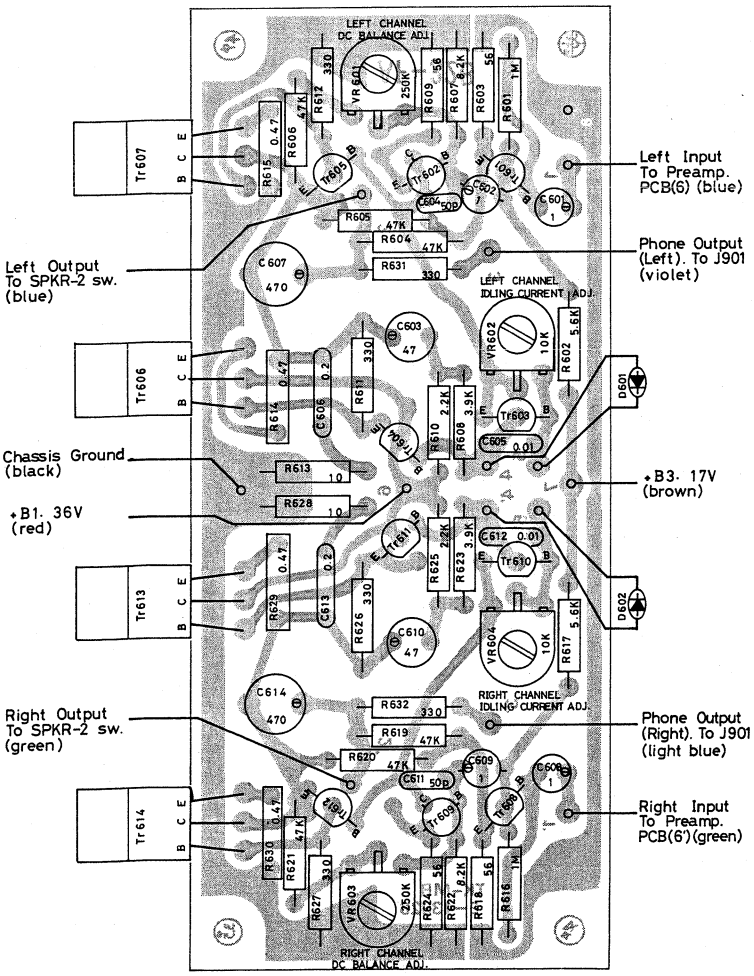
DIAL STRINGING DIAGRAM



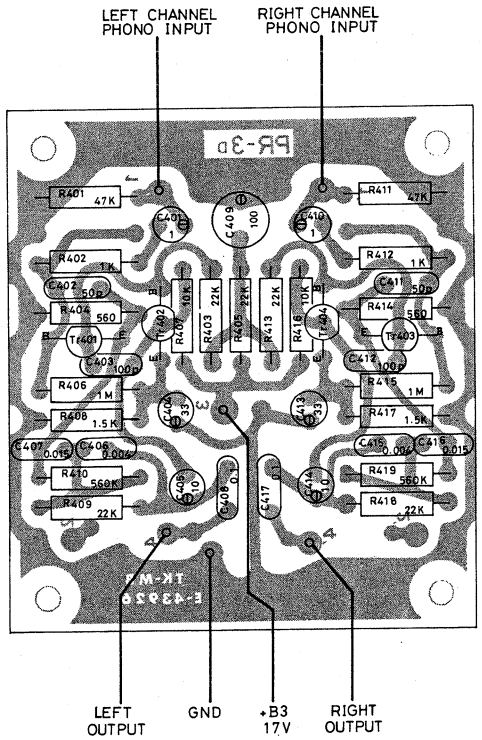
PRE-AMPLIFIER CIRCUIT BOARD DIAGRAM


Common (black) To Main Amp. PCB
Right channel (green)
Left channel (blue) To Tape Monitor switch
Input Right channel From Func. switch (white)
To Tape Out jack Right channel (brown)
+B2. 24V (orange)
To Tape Monitor switch (light blue)
To Tape Monitor switch (violet)
To Tape Out jack Left channel (grey)
Common (black) To Equalizer Amp. PCB
Input Left channel From Func. switch (yellow)
Left channel (blue)
Right channel Output To Main Amp. PCB (green)
(green) To Loudness switch (light blue)
(violet) To Loudness switch (blue)
BASS
TREBLE
BALANCE
VOLUME

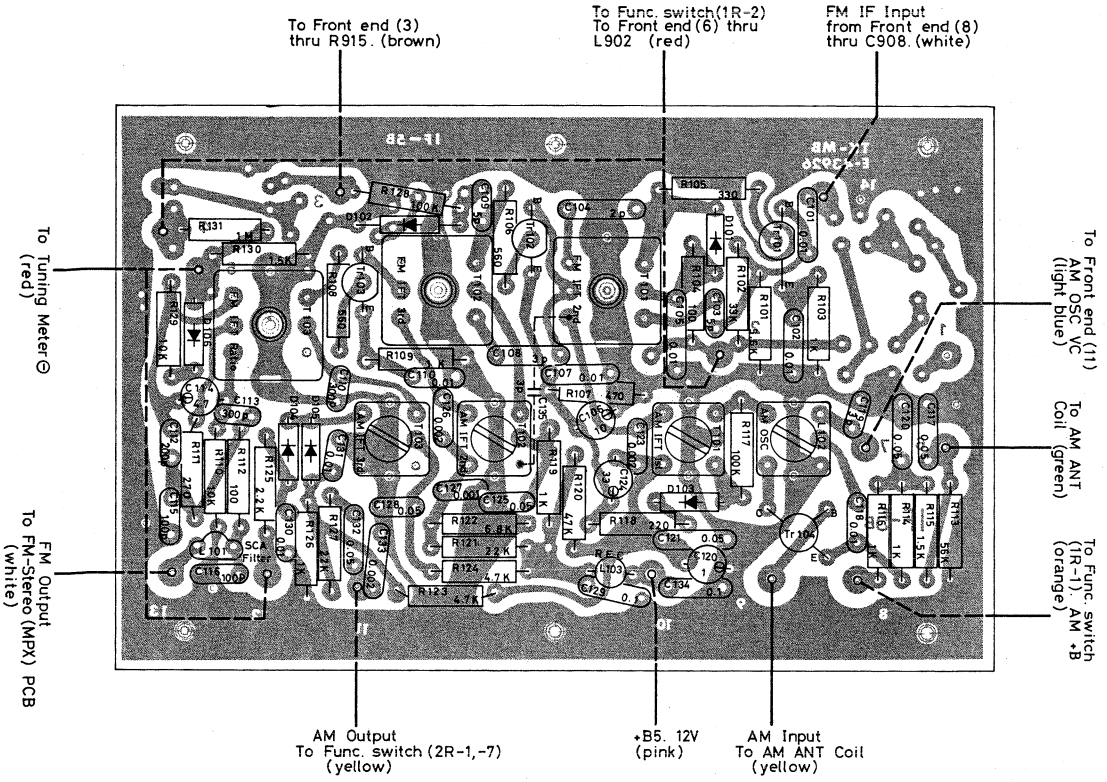
MAIN AMPLIFIER CIRCUIT BOARD DIAGRAM


LEFT CHANNEL DC BALANCE ADJ.
LEFT CHANNEL IDLING CURRENT ADJ.
RIGHT CHANNEL IDLING CURRENT ADJ.
RIGHT CHANNEL DC BALANCE ADJ.
Left Input To Preamp. PCB(6) (blue)
Phone Output (Left). To J901 (violet)
Left Output To SPKR-2 sw. (blue)
Chassis Ground (black)
+B3. 17V (brown)
+B1. 36V (red)
Right Output To SPKR-2 sw. (green)
Phone Output (Right). To J901 (light blue)
Right Input To Preamp. PCB(6')(green)

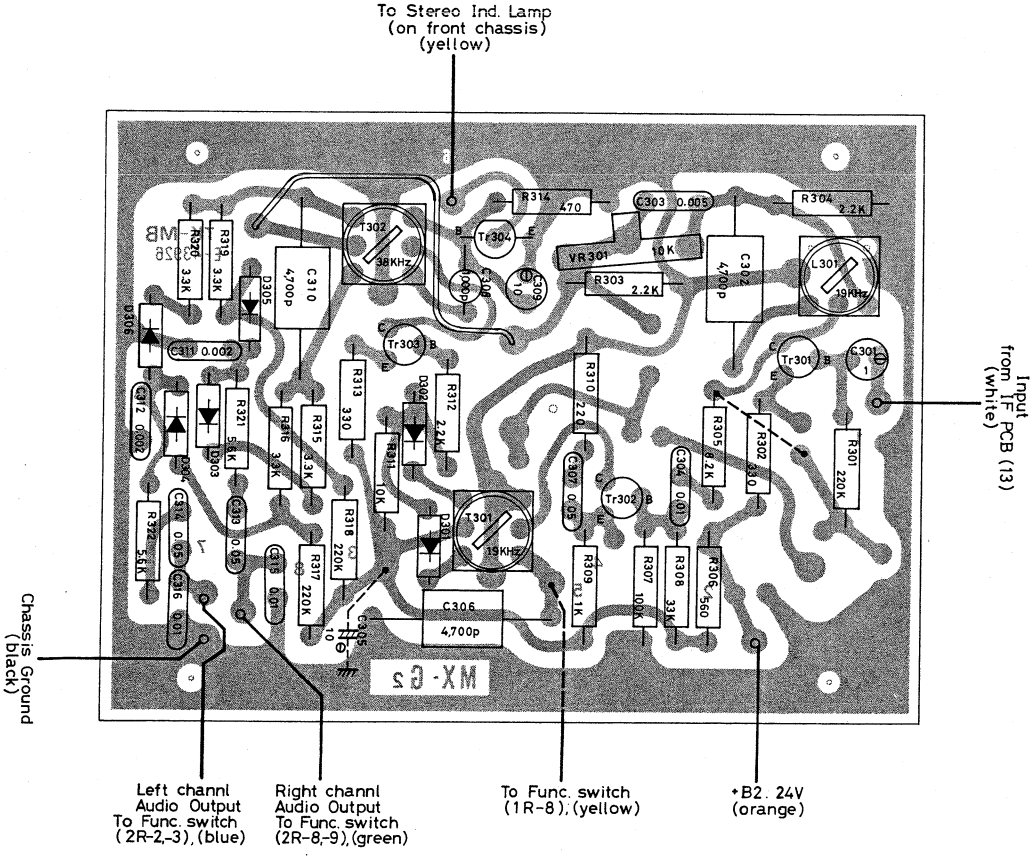
EQUALIZER AMPLIFIER CIRCUIT BOARD DIAGRAM



AM / FM IF CIRCUIT BOARD DIAGRAM


To Front end (3) thru R915. (brown)
To Func. switch(1R-2) To Front end(6) thru L902 (red)
FM IF Input from Front end (8) thru C908. (white)
To Tuning Meter ⊖ (red)
To Front end (11) AM OSC VC (light blue)
To AM ANT Coil (green)
To Func. switch (1R-1) AM +B (orange)
FM Output To FM-Stereo (MPX) PCB (white)
AM Output To Func. switch (2R-1,-7) (yellow)
+B5. 12V (pink)
AM Input To AM ANT Coil (yellow)

FM-STEREO (MPX) CIRCUIT BOARD DIAGRAM


To Stereo Ind. Lamp (on front chassis) (yellow)
Input from IF PCB (13) (white)
Chassis Ground (black)
Left channl Audio Output To Func. switch (2R-2,-3), (blue)
Right channl Audio Output To Func. switch (2R-8,-9), (green)
To Func. switch (1R-8), (yellow)
+B2. 24V (orange)

PARTS LIST

AM/FM IF CIRCUIT BOARD

Schematic Location	Part No.	Description
	CAPACITORS	
C101,102 C105,107 C110,118 C130,131	440100985	Ceramic, 0.01mfd, 250V
C103,109	440501388	Ceramic, 5pF ± 0.5pF, 250V
C104	440201388	Ceramic, 2pF ± 0.5pF, 250V
C106	402100629	Electrolytic, 10mfd, 25V
C108 135	440301388	Ceramic, 3pF ± 0.5pF, 250V
C111	440301183	Ceramic, 300pF ± 10%, 250V
C112, 113	440201183	Ceramic, 200pF ± 10%, 250V
C114	402470629	Electrolytic, 47mfd, 25V
C115,116	440101183	Ceramic, 100pF ± 10%, 250V
C117,120 C121,125 C128,132	440500985	Ceramic, 0.05mfd, 50V
C119	441301336	Ceramic, 3pF (N5.6), 50V
C122	402100749	Electrolytic, 1mfd, 50V
C123,126 C133	440201085	Ceramic, 0.002mfd, 250V
C124	402330609	Electrolytic, 33mfd, 6.3V
C127	440101085	Ceramic, 0.001mfd, 250V
C129 134	440100835	Ceramic, 0.1mfd, 50V
	RESISTORS	
R101	552056222	Carbon Film, 5.6K ± 5%, 1/4W
R102	552033322	Carbon Film, 33K ± 5%, 1/4W
R103,109 R114,116, R119,125 R126	552010222	Carbon Film, 1K ± 5%, 1/4W
R104,112	552010122	Carbon Film, 100 ± 5%, 1/4W
R105	552033122	Carbon Film, 330 ± 5%, 1/4W
R106,108	552056122	Carbon Film, 560 ± 5%, 1/4W
R107	552047122	Carbon Film, 470 ±5%, 1/4W
R110,129	552010322	Carbon Film, 10K ± 5%, 1/4W

Schematic Location	Part No.	Description
R111	552027122	Carbon Film, 270 ± 5%, 1/4W
R113	552056322	Carbon Film, 56K ± 5%, 1/4W
R115,130	552015222	Carbon Film, 1.5K ± 5%, 1/4W
R117,128	552010422	Carbon Film, 100K ± 5%, 1/4W
R118,124	552022122	Carbon Film, 220 ± 5%, 1/4W
R120,123	552047322	Carbon Film, 47K ± 5%, 1/4W
R121,127	552022322	Carbon Film, 22K ± 5%, 1/4W
R122	552068222	Carbon Film, 6.8K ± 5%, 1/4W
R131	552010522	Carbon Film, 1M ± 5%, 1/4W
	TRANSFORMERS AND COILS	
T101,102	225501116	FM IFT, 10.7MHz
T103	225501117	FM IFT, Ratio
T104	225301121	AM IFT, 455KHz
T105	225301122	AM IFT, 455KHz
T106	225301124	AM IFT, 455KHz
L101	228641111	Coil, SCA Filter
L102	223301121	Coil, AM OSC
L103	220001121	Coil, RF choke, 47 micro-henry
	TRANSISTORS AND DIODES	
Tr101,102 Tr103	301201117	2SC829C
Tr104	301001124	2SA102
D101,102 D103,104 D105	300111008	Diode, 1S188
D106	300919008	Diode, S-05
	140300343	Printed Circuit Board
	141311344	AM/FM IF Amp. Circuit Board Assembly

FM-STEREO CIRCUIT BOARD

Schematic Location	Part No.	Description
	CAPACITORS	
C301	402100749	Electrolytic, 1mfd, 50V
C302,306 C310	453471033	Polystyrene Film, 4,7000pF ± 10%, 50V
C303	442501083	Ceramic, 0.005mfd ± 10%, 250V
C304,315 C316	450100933	Mylar Film, 0.01mfd ± 10%, 50V
C305,309	402100629	Electrolytic, 10mfd, 25V
C307	450500933	Mylar Film, 0.05mfd ± 10%, 50V
C308	454101073	Polystyrene Film, 1000pF ± 10%, 125V

Schematic Location	Part No.	Description
C311,312	442201083	Ceramic, 0.002mfd ± 10%, 250V
C313,314	440500933	Ceramic, 0.05mfd, 50V
	RESISTORS	
R301,317 R318	552022422	Carbon Film, 220K ± 5%, 1/4W
R302,313	552033122	Carbon Film, 330 ± 5%, 1/4W
R303,304 R312	552022222	Carbon Film, 2.2K ± 5%, 1/4W
R305	552082222	Carbon Film, 8.2K ± 5%, 1/4W
R306	552056122	Carbon Film, 560 ± 5%, 1/4W
R307	552010422	Carbon Film, 100K ± 5%, 1/4W

Schematic Location	Part Nol	Description
R308	552033322	Carbon Film, 33K ± 5%, 1/4W
R309	552010222	Carbon Film, 1K ± 5%, 1/4W
R310	552022122	Carbon Film, 220 ± 5%, 1/4W
R311	552010322	Carbon Film, 10K ± 5%, 1/4W
R314	552047122	Carbon Film, 470 ± 5%, 1/4W
R315,316 R319,320	552033222	Carbon Film, 3.3K ± 5%, 1/4W
R321,322	552056222	Carbon Film, 5.6K ± 5%, 1/4W
VR301	510502102	Potentiometer, 10K, Separation Adj.
	TRANSISTORS AND DIODES	
Tr301,302 Tr303	301001111	2SA49
Tr304	301201115	2SC828
D301,302 D303,305 D306	300111008	Diode, 1S188

Schematic Location	Part No.	Description
	COIL AND TRANSFORMERS	
L301	225601125	Coil, MPX, 19KHz
T301,302	225601126	Transformer, MPX, 19KHz/38KHz
	140400438	Printed Circuit Board
	141411421	FM-Stereo Circuit Board Assembly

EQUALIZER AMP. CIRCUIT BOARD

Schematic Location	Part No.	Description
	CAPACITORS	
C401,410	402100749	Electrolytic, 1mfd, 50V
C402,411	440501283	Ceramic, 50pF ± 10%, 250V
C403,412	440101183	Ceramic, 100pF ± 10%, 250V
C404,413	402330609	Electrolytic, 33mfd, 6.3V
C405,414	402100629	Electrolytic, 10mfd, 25V
C406,415	442401083	Ceramic, 0.004mfd, ± 10%, 250V
C407,416	450150933	Mylar Film, 0.015mfd ± 10%, 50V
C408,417	440100835	Ceramic, 0.1mfd, 50V
C409	402100519	Electrolytic, 100mfd, 16V
	RISISTORS	
R401,411	552047322	Carbon Film, 47K ± 5%, 1/4W
R402,412	552010222	Carbon Film, 1K ± 5%, 1/4W
R403,405	552022322	Carbon Film, 22K ± 5%, 1/4W

Schematic Location	Part No.	Description
R409,413 R418		
R404,414	552056122	Carbon Film, 560 ± 5%, 1/4W
R406,415	552010522	Carbon Film, 1M ± 5%, 1/4W
R407,416	552010322	Carbon Film, 10K ± 5%, 1/4W
R408,417	552015222	Carbon Film, 1.5K ± 5%, 1/4W
R410,419	552056422	Carbon Film, 560K ± 5%, 1/4W
	TRANSISTORS	
Tr401,402 Tr403,404	301201114	2SC644
	140500522	Printed Circuit Board
	141510119	Equalizer Amp. Circuit Board Assembly

PRE-AMPLIFIER CIRCUIT BOARD

Schematic Location	Part No.	Description
	CAPACITORS	
C501,509	402100749	Electrolytic, 1mfd, 50V
C502,510 C517,518	402100629	Electrolytic, 10mfd, 25V
C503,511	402330609	Electrolytic, 33mfd, 6.3V
C504,512	442201083	Ceramic, 0.002mfd ± 10%, 250V
C505,513	450200933	Mylar Film, 0.02mfd ± 10%, 50V
C506,514	450300933	Mylar Film, 0.03mfd ± 10%, 50V
C507,515	450200833	Mylar Film, 0.2mfd ± 10%, 50V
C508,516	450100833	Mylar Film, 0.1mfd ± 10%, 50V

Schematic Location	Part No.	Description
	RESISTORS	
R501,505 R509,516 R520,524	552010222	Carbon Film, 1K ± 5%, 1/4W
R502,512 R517,527	552022222	Carbon Film, 2.2K ± 5%, 1/4W
R503,518	552068322	Carbon Film, 68K ± 5%, 1/4W
R504,519	552010522	Carbon Film, 1M ± 5%, 1/4W
R506,514 R521,529	552056222	Carbon Film, 5.6K ± 5%, 1/4W

Schematic Location	Part No.	Description
R507,522	552033222	Carbon Film, 3.3K ± 5%, 1/4W
R508,523	552015222	Carbon Film, 1.5K ± 5%, 1/4W
R510,511		
R525,526	552010322	Carbon Film, 10K ± 5%, 1/4W
R513.528	552022322	Carbon Film, 22K ± 5%, 1/4W
R515,530	552039222	Carbon Film, 3.9K ± 5%, 1/4W
VR501,502	525101111	Variable, 50K, Bass and Treble Control
VR503	515101118	Variable, 250K, Balance Control
VR504	525121114	Variable, 100K, Volume Control

Schematic Location	Part No.	Description
Tr501,503	301201114	2SC644
TR502,504	301201115	2SC828
	140700727	Printed Circuit Board
	141710218	Preamplifier Circuit Board Assembly

MAIN AMPLIFIER CIRCUIT BOARD

Schematic Location	Part No.	Description
	CAPACITORS	
C601,602] C608,609]	402100749	Electrolytic, 1mfd, 50V
C603,610	402470639	Electrolytic, 47mfd, 35V
C604,611	440501283	Ceramic, 50pF ± 10%, 250V
C605,612	440100983	Ceramic, 0.01mfd, 250V
C606,613	450200833	Mylar Film, 0.2mfd ± 10%, 50V
C607,614	402470519	Electrolytic, 470mfd, 16V
	RESISTORS	
R601,616	552010522	Carbon Film, 1M ± 5%, 1/4W
R602,617	552056222	Carbon Film, 5.6K ± 5%, 1/4W
R603,609] R618,624]	552056022	Carbon Film, 56 ± 5%, 1/4W
R604,605] R606,619] R620,621]	552047322	Carbon Film, 47K ± 5%, 1/4W
R607,622	552082222	Carbon Film, 8.2K ± 5%, 1/4W
R608,623	552039222	Carbon Film, 3.9K ± 5%, 1/4W
R610,625	552022222	Carbon Film, 2.2K ± 5%, 1/4W

Schematic Location	Part No.	Description
R611,612] R626,627]	551033133	Composition, 330 ± 10%, 1/2W
R613,628	551010033	Composition, 10 ± 10%, 1/2W
R614,615] R629,630]	554147953	Bathtub, 0.47 ± 10%, 2W
VR601,603	510502115	Potentiometer, 250K, DC Balance Adj
VR602,604	510502114	Potentiometer, 10K, Idling Current Adj.
	TRANSISTORS AND DIODES	
Tr601,608	301201114	2SC644
Tr602,609	301201113	2SC538A
Tr603,610	301201115	2SC828
Tr604,611	301201132	2SC1384
Tr605,612	301001123	2SA684
Tr606,607] Tr613,614]	301201133	2SC1107 or 2SD317 (301301122)
D601,602	300212004	Varistor, KB-265
	127012104	Heat Sink for Power Transistors
	140600650	Printed Circuit Board
	141610222	Main Amplifier Circuit Board Assembly

CABINET AND CHASSIS PARTS

Schematic Location	Part No.	Description
	131011230	Cabinet
	111911232	Front Panel Assembly
	116310054	Knob, Tuning
	116310055	Knob, Func., Vol,. Bal., Bass and Tre
	116210008	Button, Push Switch
	121011269	Chassis Body
	321304359	Front end, AM/FM
	122011270	Front Chassis

Schematic Location	Part No.	Description
	112011240	Dial Board
	151691117	Dial Pointer W/Lamp
	655310007	Dial Pulley
	658601113	Dial Spring
	613000021	Switch, Speaker Matrix
	601011227	Switch, Function Selector
	614051006	Switch, Push 5 keys
J901	626110023	Jack, Headphones

Schematic Location	Part No.	Description
	654911282	Shaft, Tuning
	231310019	Meter, Tuning
	640011112	Bracket, Dial Lamp
	352063028	Lamp, 6.3V, 0.28A, Dial Illumination
	351080015	Lamp, 8V, 0.15A, Dial Pointer
	351140005	Lamp,14V,50mA, FM-Stereo Indicator
	123011273	Rear Chassis
	641200104	Screw Terminal 4P
	624100210	Pin Jack 10P
	648211114	Fuse Bracket
J902	648211116	AC Outlet
F901	341220015	Fuse, 1.5A – 3AG
F902	341220020	Fuse, 2A – 3AG
	761911113	Screw, GND Terminal
	CAPACITORS	
C901,902	440501283	Ceramic, 50pF ± 10%, 250V
C903	401100429	Electrolytic, 1,000mfd, 25V
C904,905	401100439	Electrolytic, 1,000mfd, 35V
C906	400220449	Electrolytic, 2,200mfd, 50V
C907	401470519	Electrolytic, 470mfd, 16V
C908	440151183	Ceramic, 150pF ± 10%, 250V
C909	440501183	Ceramic, 500pF ± 10%, 250V
C910	440100835	Ceramic, 0.1mfd, 50V
	RESISTORS	
R901,903	552033523	Carbon Film, 3.3M ± 10%, 1/4W
R902,904 R906,908 R915	552010422	Carbon Film, 100K ± 5%, 1/4W
R905,907	552022322	Carbon Film, 22K ± 5%, 1/4W
R909	551010233	Composition, 1K ± 10%, 1/2W

Schematic Location	Part No.	Description
R910	551047133	Composition, 470 ± 10%, 1/2W
R911	553039163	Metal Oxide, 390 ± 10%, 3W
R912,913	551082133	Composition, 820 ± 10%, 1/2W
R914	551022533	Composition, 2.2M ± 10%, 1/2W
R916	552010122	Carbon Film, 100 ± 5%, 1/4W
R917,918 R919		Not used
R920,921	551033133	Composition, 330 ± 10%, 1/2W
R922,923	554020863	Bathtub, 2 ± 10%, 3W
	DIODES	
D901	300919005	1S1850, Rectifier
D902	300313004	BZ-120, Zener
	COILS AND TRANSFORMER	
L901	222391118	AM ANT COIL
L902	220001121	RF Choke, 47μ(H)
T901	205001321	Power Transformer

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